

# Open Paper Management Tool Open Items Report



Thursday, April 05, 2007

**Open Item Number:** 05-042 **RID Open Date:** 9/14/2005

**Title:** Helium Venting Hazard Analysis

*Intiator(s):* 

**Description:** Provide hazard analysis for venting of helium from the main tank.

#### Action Item Information

Actionee(s): Chris Tutt/ESCG Action Due Date: 4/1/2007

**Action:** Take existing hazard analysis of helium venting presented to NASA and create stand-alone report for delivery to ESTEC.

Action Status: 11/20/06 - Date rolled to April 1st to better reflect need. Meeting at ESTEC planned for late April.

8/14/06 - Date rolled to September 1st.

6/5/06 - Necessary information received from SCL. In-work, C. Tutt.

3/30/2006 - Date changed again as analyst is not becoming any faster.

3/6/2006 - Date changed to 4/1 to account for slothful analyst.

11/14/2006 - Date changed to 3/1 to better reflect analyst workloads.

**Open Item Number:** 05-043 **RID Open Date:** 9/14/2005

**Title:** Helium Venting Hazard Analysis

**Intiator**(s):

**Description:** Provide hazard analysis for venting of helium from the main tank.

## **Action Item Information**

Actionee(s): Gaetan Piret/ESTEC Action Due Date: 5/1/2007

Action: Upon delivery of hazard analysis described in 05-042, evaluate potential hazards to EMI and TV test chambers.

Action Status: 11/20/06 - Date rolled to May 1st to roll with 05-042.

8/14/06 - Date rolled to October 1st.

4/10/06 - Due date changed to 6/1/06 allow time after completion of 05-042.

11/12/2005 - Date changed to 4/1/2006 to match item 05-042.

**Open Item Number:** 05-054 **RID Open Date:** 9/16/2005

**Title:** Leak Before Burst Analysis

*Intiator(s):* 

**Description:** Determine whether current condensor tube design is acceptable to NASA safety community.

## **Action Item Information**

Actionee(s): Chris Tutt/ESCG Action Due Date: 9/30/2005

**Action:** Obtain written concurrence from Glenn Ecord and Bill Manha that existing condensor tube and magnetic flange design and verification plan are acceptable.

Action Status: 3/26/2007 - Johannes confirms testing will still be done at Resato, not AIDC. No date set yet.

2/5/2007 - Test company identified (Resato), final details in work. Test expected within a month.

11/27/2006 - Test Plan is being negotiated with Test Company; awaiting test costs.

6/26/2006 - Awaiting design detail from Johannes before work can continue.

5/08/2006 - Disussions w/ Manha indicate that Safety Factor relief is possible; but need final design for

tube sizing before they can commit.

11/10/2005 - Magnetic flange added to list.

**Open Item Number:** 05-074 **RID Open Date:** 10/28/2005

Title: CGSE Support at Pad

**Intiator**(s): Trent Martin

**Description:** It is not clear how the cryogenic GSE, particularly the piping, will be supported at the pad.

#### Action Item Information

Actionee(s): Robert Becker/MIT, Alexander Gretchko/MIT

**Action Due Date:** 6/1/2007

**Action:** Provide details on how the GSE will be supported at the pad.

**Action Status:** 2/5/2007 - Date rolled to 6/1/07.

11/27/06 - J. Keiffenheim reports that space is available for hanging plumbing, and KSC can design, manufacture hanging hardware. Still have concerns regarding fill port plumbing suspension, so will keep open.

10/16/06 - Date rolled to 11/15 after Cryo GSE meeting at KSC.

6/26/2006 - Date rolled to October 15th after Magnet Processing meeting at KSC.

5/15/2006 - Further discussion on handling of CGSE after PLBD close prelaunch is required.

3/24/2006 - Trent Martin to forward all data provided by KSC to Art Nelson for inclusion in ground safety package.

2/14/2006 - Alexander Gretchko waiting on information from KSC - Trent Martin to coordinate.

**Open Item Number:** 05-081 **RID Open Date:** 10/28/2005

Title: Charged Magnet during Beam Testing

**Intiator**(s): Trent Martin

**Description:** Ferrous metals in the beam test location could interfere with the AMS-02 magnet.

## **Action Item Information**

Actionee(s): Robert Becker/MIT

Action Due Date: 6/1/2007

**Action:** Robert Becker to provide CAD model of AMS test beam area clearly identifying all ferrous metals in the area so that a loads assessment can be done on the magnet.

**Action Status:** 2/5/2007 - Date rolled to 6/1/07.

3/3/3006 - Action on hold until beam test location finalized. Due date changed to 1/1/2007

2/14/2006 - Requirement for flight magnet during beam test is under review. Action may be moot.

**Open Item Number:** 05-103 **RID Open Date:** 2/20/2007

Title: Risk Mitigation Plan for TTCS Welding

**Intiator**(s): Tim Urban

**Description:** Develop a risk mitigation plan for in-situ welding during flight integration.

## **Action Item Information**

Actionee(s): M. Capell Action Due Date: 3/5/2007

Action:

Action Status: 3/26/2007 - Welding requirements provided by Johannes and discussed at integration meeting in

Geneva. No major problems foreseen, but test to be done on surplus crate as soon as one becomes available. Most likely sometime this fall. Johannes to send more detailed plan around for review.

2/20/2007 - Waiting on information from Johannes.

Open Item Number: 05-105 RID Open Date: 2/23/2007

**Title:** Autoignition Safety Hazard

**Intiator**(s): C. Tutt

**Description:** CGS LTA thermal analysis should contain information to close autoignition safety hazard.

## Action Item Information

Actionee(s): C. Clark

Action Due Date: 2/26/2007

Action: Review CGS LTA thermal analysis to determine if sufficient data to close the autoignition safety hazard.

Action Status: 4/5/2007 - More details needed on baroswitch electronics. Tim Urban to work with Volker Commichau

and Mike Capell.

3/26/2007 - Autoignition temperatures do not seem to be a problem, but Craig Clark and Tim Urban

working to clarify what parts of CAB will be powered during ascent.

**Open Item Number:** 05-106 **RID Open Date:** 2/23/2007

Title: Schedule for RICH/ECAL Blanket Manufacture

**Intiator**(s): C. Tutt

**Description:** Need to confirm that the blankets for RICH and ECAL will be available for Pre-Integration activities at

**CERN** 

## **Action Item Information**

Actionee(s): M. Molina Action Due Date: 2/26/2007

Action: Provide schedule to J. Heilig for inclusion in the Pre-Integration schedule.

Action Status: 3/26/2007 - Issue discussed at integration meeting in Geneva. Marco to provide schedule to John by 23

April.

Open Item Number: 05-107 RID Open Date: 2/23/2007

Title: Beta Cloth Material Testing

**Intiator**(s): C. Tutt

Description: Excess Aluminized Beta Cloth must be tested be tested because out of date cert.

#### Action Item Information

Actionee(s): C. Clark

Action Due Date: 2/26/2007

**Action:** Work with J. Cornwell to get schedule for completion of testing to ensure that TRD Blanket manufacture can begin on time.

Action Status: 3/26/2007 - Test equipment has been returned - Trent Martin to pulse ES on status.

2/26/2007 - Need progress soon. This beta-cloth to be used for JSC blankets; and clean room will be lost

in July. Also required for CGS blankets.

Open Item Number: AMS\_02-CDR-06 RID Open Date: 5/1/2003

Title: AMS-CDR-1-17: Meteoroid/Orbital Debris Shielding

Intiator(s): E. Christiansen/NASA

Description: Shielding from meteoroid/debris impact is inadequate to meet protection requirements. Shielding of pressurized vessels on AMS-02 such as the vacuum case and TRD (as well as any other pressure vessel) is required to prevent catastrophic rupture of these tanks in the event of meteoroid/debris impact which would release high-velocity fragments creating a potentially serious safety issue for on-board crew. The assessed probability of no penetration (PNP) using specified environment models is 0.97 which is far below the specified 0.997 PNP requirement. Updating ballistic limit equations and models as described in the forward work plan does not appear adequate to show compliance with requirements. Additional or significantly enhanced shielding will likely be necessary to meet safety requirements.

#### **Action Item Information**

Actionee(s): Dana Lear/ESCG

**Action Due Date: 8/15/2006** 

Action: Complete analysis and coordinate design of debris shields. To be completed by Phase III Safety.

Action Status: 4/5/2007 - Work on hold per direction of NASA - expected to resume within a month.

3/26/2007 - Dana Lear expects results within two weeks.

12/18/06 - W. Minter returning within a few weeks. D. Lear has updated model and work should resume shortly.

10/16/06 - Trent pressed Eric Christiansen - action to Ross to work with D. Lear to update model.

6/26/2006 - R. Harold to work with Will Minter on model updates. Will is available until end of August.

05/03/05 - The AMS-02 modeling for the MMOD assessment was completed last week. Additionally, the BUMPER geometry runs have been completed. Since the input scripts have not been run in years, Dana Lear verifying/updating all inputs for both the shield ballistic response definitions (BLEs) and the mission parameters.

01/19/05 - L. Hill to get in touch with D. Lear to discuss what L. Hill needs for Phase II.

Open Item Number: AMS\_02-PDS\_CDR-06 RID Open Date: 4/18/2005

Title:

Intiator(s): Tim Urban

Description:

#### **Action Item Information**

Actionee(s): Marco Molina Action Due Date: 3/5/2007

Action: Re-evaluate thermal optical properties on the top of the PDS as there are no longer heaters located there (breakdown of MLI vs. white paint). QM & FM different?

Action Status: 3/26/2007 - Work has restarted - ECD on this question 4/15.

2/5/2007 - ASI budget approved; some movement on contract. Dates rolled to 3/5/07.

8/28/06 - Contract still in work. Work-around by using EM for initial testing. Roll date to 10/5.

7/7/06 - Investigate contract status at July TIM.

5/08/2006 - Contract to be in place by June; roll date to 7/1/06

4/10/06 - On-hold pending resolution of ETH/CGS contract.

8/2/2005 - Awaiting thermal analysis of revised worst hot case.

Open Item Number: AMS\_02-PDS\_CDR-08 RID Open Date: 4/18/2005

Title:

Intiator(s): Tim Urban

Description:

#### **Action Item Information**

Actionee(s): S. Alia Action Due Date: 3/5/2007

Action: Add 0.03 μF per 3.2.2.2.2.A of SSP 57003, and add verification by design inspection or test.

Action Status: 3/26/2007 - Updated reports to be released at PDS MRR in December.

2/5/2007 - ASI budget approved; some movement on contract. Dates rolled to 3/5/07.

8/28/06 - Contract still in work. Work-around by using EM for initial testing. Roll date to 10/5.

5/08/2006 - Contract to be in place by June; roll date to 7/1/06

4/10/06 - On-hold pending resolution of ETH/CGS contract.

11/7/2005 - All further PDS activities on hold until 6 Feb 2006.

8/22/2005 - CGS proposes release of updated document by 9/19.

8/15/2005 - Tim Urban to contact Sergio Alia and resolve remaining concerns. Closure expected by 9/5.

Open Item Number: AMS\_02-PDS\_CDR-09-2 RID Open Date: 4/18/2005

Title:

Intiator(s): Tim Urban

Description:

## **Action Item Information**

Actionee(s): S. Alia Action Due Date: 3/5/2007

**Action:** Update document for maximum operating temperature of 51°C (Section 3.2, requirement ID PDS-ENV-3).

Action Status: 2/5/2007 - ASI budget approved; some movement on contract. Dates rolled to 3/5/07.

8/28/06 - Contract still in work. Work-around by using EM for initial testing. Roll date to 10/5.

5/08/2006 - Contract to be in place by June; roll date to 7/1/06

4/10/06 - On-hold pending resolution of ETH/CGS contract.

11/7/2005 - All further PDS activities on hold until 6 Feb 2006.

8/22/2005 - CGS proposes release of updated document by 9/19.

8/2/2005 - MOT should be changed to match updated worst case hot temperature.

Open Item Number: AMS\_02-Thermal\_CDR-17 RID Open Date: 4/7/2005

Title: Insert test and its applicability to different size of insert

Intiator(s): H. C. Lo/NASA-JSC

**Description:** DISCREPANCY

Three inserts, with size 3 fastener and face sheet of material 2024, were tested. The requirement to test 12 more insert has been planned. The upcoming test will use 6061 material face sheet. Also, there are two types of inserts, namely size 3 and size 4. The test result based on size 3 and 2024 will be deemed applicable to size 4 and 6061. Rationale has to be provided to make this jump of application.

#### **Action Item Information**

Actionee(s): Marco Molina/CGS

**Action Due Date:** 10/15/2006

Action: Test result has to be presented and rationale given for the test applicability to cover size 4 insert and different face sheet material 6061. Test proposal end of April. Perform test ASAP

Action Status: 4/5/2007 - Stress report released

3/26/2007 - ECD for stress report is 4/15.

2/5/2007 - RITF Testing complete. Action back to CGS.

10/30/06 - Inserts to be shipped to T. Martin by end of week.

8/7//2006 - Date rolled to 10/15. Inserts ready on that date.

5/08/2006 - Date rolled to 7/2/2006 to reflect CGS Thermal contract status.

2/10/2006 - Test has been included in proposed CAST SOW.

8/8/2005 - CGS proposes ATP+2 months as projected test date.

Open Item Number: AMS\_02-TTCS\_PDR-05 RID Open Date: 4/4/2005

Title: Incorrect Figure Title

Intiator(s): H. C. Lo/NASA-JSC

**Description:** DISCREPANCY:

Figure 15 is mention in section 6. But there is no figure 15.

#### **SUGGESTED SOLUTION:**

Correct the typo.

## Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 10/1/2006

Action: NLR to correct typos in next release of document.

Action Status: 3/26/2007 - Marco to clarif with Johannes who is working TTCB stress issues now.

11/20/06 - Telecon scheduled for 11/21 to get latest status from Johannes. Requires TTCB stress report

update.

5/08/2006 - Date rolled to on-month after TTCS\_PDR-03.

11/28/2005 - Based on new NIKHEF contract, due date changed to 2/6/2006.

9/9/2005 - Typo will be corrected in next release of document.

Open Item Number: AMS\_02-TTCS\_PDR-07 RID Open Date: 4/4/2005

*Title:* Visual inspection of the weld and fracture analysis

Intiator(s): H. C. Lo/NASA-JSC

## **Description:** DISCREPANCY:

- 1. Since visual inspection will be the inspection method for post-test verification, when perform fracture analysis, the minimum crack size has to be conforming to the inspection method.
- 2. Is there a structural analysis performed on the welds, including fracture analysis, as required?
- 3. Welding is performed at room temperature. During operation, the weld will be at a much lower temperature. How do we guarantee that the weld will be performing at a much lower temperature, possibly due to residual stress?

#### **SUGGESTED SOLUTION:**

Present strength and fracture analysis.

#### Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 7/15/2005

**Action:** NLR to provide strength and fracture analysis

Action Status: 3/26/2007 - Marco to clarif with Johannes who is working TTCB stress issues now.

11/20/06 - Telecon scheduled for 11/21 to get latest status from Johannes. Requires TTCB stress report update.

9/18/06 - B. Sommer and D. Rybicki to discuss closure with Dr. Lo.

5/15/2006 - D. Rybicki reviewed weld plan and is satisfied with process. Working to set up meeting with Dr. Lo to close RID.

11/14/2005 - Weld procedure is available and has been sent to Dan Rybicki/ESCG for review. Johannes Van Es/NLR to supply all documentation to Bruce Sommer by 11/18 for additional review.

Open Item Number: AMS\_02-TTCS\_PDR-10 RID Open Date: 4/4/2005

**Title:** Negative safety margin

Intiator(s): H. C. Lo/NASA-JSC

**Description:** DISCREPANCY:

Negative safety margins are shown in the analysis. Though the analysis is stated as rough analysis since detail information on components at this time is still not available, suggested remedy was not presented. Or different analysis approach is not attempted.

#### **SUGGESTED SOLUTION:**

Since this is a delta CDR, remedy for negative safety margin should be provided. The remedy can be redesign of the base plate/fasteners. Or the analysis can be re-done with different approach to show a positive safety margin. Leaving negative safety margin as presented is not desirable.

#### **Action Item Information**

Actionee(s): Corrado Gargiulo/INFN, Xinmei Qi/SYSU

**Action:** NLR to provide remedy for any negative margins of safety presented at PDR.

Action Status: 3/26/2007 - Marco to clarif with Johannes who is working TTCB stress issues now.

9/18/06 - Xinmei has sent bolt calculations. NLR to finish analysis on bolts and components. Combined report to be issued by NLR. Date rolled to 12/25.

4/10/2006 - Johannes to pulse X. Qi

3/3/2006 - Xinmei Qi has completed updated analysis and will provde report to Bruce Sommer for review.

11/14/2005 - Updated analysis will be presented at TWG meeting in Milano.

9/9/2005 - Updated analysis will be presented at TTCS CDR.

Action Due Date: 12/25/2006

Open Item Number: AMS\_02-TTCS\_PDR-11 RID Open Date: 4/4/2005

**Title:** Bolt and insert analysis

Intiator(s): H. C. Lo/NASA-JSC

**Description:** DISCREPANCY:

1. how the bolt analysis is done is not presented in the subject document.

- 2. bolt and insert technical information is not presented in the document.
- 3. it is not clear that pre-load is considered in the bolt in the analysis.

#### **Action Item Information**

Actionee(s): Corrado Gargiulo/INFN, Xinmei Qi/SYSU

**Action Due Date:** 12/25/2006

**Action:** NLR to provide bolt details and analysis for TTCS box.

Action Status: 3/26/2007 - Marco to clarif with Johannes who is working TTCB stress issues now.

9/18/06 - Xinmei has sent bolt calculations. NLR to finish analysis on bolts and components. Combined report to be issued by NLR. Date rolled to 12/25.

5/15/2006 - Date changed to Sept. 1, 2006 after consultation with NLR/SYSU.

3/3/2006 - Xinmei Qi has completed updated analysis and will provde report to Bruce Sommer for review.

11/14/2005 - Updated analysis will be presented at TWG meeting in Milano.

9/9/2005 - Details to be provided at TTCS CDR.

Open Item Number: AMS\_02-TTCS\_PDR-12 RID Open Date: 4/4/2005

**Title:** Finite element analysis approach and fastener analysis

Intiator(s): H. C. Lo/NASA-JSC

## **Description:** DISCREPANCY:

1. "All box masses (including inside components) are modelled as uniformly distributed over the baseplate top face..."" The box itself is not connected to the base plate. And the box has its own fastening point with USS. This assumption can be in error.

- 2. components/baseplate interface are connected with fasteners. It appears that there is no information on these. As such, no analysis on these fasteners.
- 3. No analysis provided on components within TTCB.

## **Action Item Information**

Actionee(s): Corrado Gargiulo/INFN, Xinmei Qi/SYSU

**Action Due Date:** 12/25/2006

Action: NLR to provide design detail and finite element analysis of TTCB components.

Action Status: 3/26/2007 - Marco to clarif with Johannes who is working TTCB stress issues now.

9/18/06 - Xinmei has sent bolt calculations. NLR to finish analysis on bolts and components. Combined report to be issued by NLR. Date rolled to 12/25.

5/15/2006 - Date changed to Sept. 1, 2006 after consultation with NLR/SYSU.

3/3/2006 - Xinmei Qi has completed updated analysis and will provde report to Bruce Sommer for review.

11/14/2005 - Updated analysis will be presented at TWG meeting in Milano.

9/8/2005 - Analysis to be provided at TTCS CDR.

Open Item Number: AMS\_02-TTCS\_PDR-20 RID Open Date: 4/4/2005

**Title:** Modes Missing

*Intiator(s):* Mike Capell/AMS

**Description:** DISCREPANCY:

Usually a document like this contains a table summarizing the first N modes (their frequency and effective

mass).

It is not noted that this is being/has been performed, just a few pictures (Fig 17,18,19) are included without reference.

## Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 12/25/2006

Action: NLR to provide more details in the structural analysis report.

**Action Status:** 9/18/06 - Xinmei has sent bolt calculations. NLR to finish analysis on bolts and components. Combined report to be issued by NLR. Date rolled to 12/25.

5/15/2006 - Date changed to Sept. 1, 2006 after consultation with NLR/SYSU.

3/3/2006 - Johannes Van Es to provide document to Mike Capell and Craig Clark for review.

11/14/2005 - Document to be released in time to support TWG meeting in Milano.

11/7/2005 - NLR proposes 12/1 for document release date.

Open Item Number: MAG-Review-01 RID Open Date: 8/9/2006

Title: Measurement of Helium Depletion during a Quench

*Intiator(s):* Robin Staffin/DOE

**Description:** Make measurement of the amount of helium that is used during a quench and recharge a test objective.

## **Action Item Information**

Actionee(s): Stephen Harrison Action Due Date: 4/15/2007

Action: Develop a plan to measure the helium that is depleted in a quench.

Action Status: 10/30/06 - Detailed test procedure to be supplied by April 2007.

8/21/06 - The measurement itself can only be done with the flight cryostat. Work required will include

remodelling the quench cryogenics, and writing detailed procedure.

Open Item Number: MAG-Review-04 RID Open Date: 8/9/2006

**Title:** Thermal Cycling in the MATF

*Intiator(s):* Robin Staffin/DOE

**Description:** Add at least one additional thermal cycle to the magnet testing in the MATF. For example: Step 7B - Warm the magnet system to room temperature and recool to 1.8K.

#### **Action Item Information**

Actionee(s): Stephen Harrison Action Due Date: 3/23/2007

**Action:** Generate a test plan for MATF incorporating the thermal cycle with magnet warmed to room temp, and recooled to 1.8K.

Action Status: 2/5/2007 - SM to provide test plan by 3/23/07. Date rolled accordingly.

10/30/06 - Detailed test procedure to be supplied by December 2006.

8/21/06 - This requires just inserting a number of additional steps in the test procedure. Cost and

schedule resources to complete this action TBD.

Open Item Number: MAG-Review-05 RID Open Date: 8/9/2006

**Title:** Measurement of inter-coil joint resistance

**Intiator**(s): Robin Staffin/DOE

**Description:** Show how the resistance of the inter-coil joints is planned to be measured in the coming test program.

(Related to magnetic field decay)

## Action Item Information

Actionee(s): Steve Milward Action Due Date: 4/15/2007

Action: Generate a test plan for measuring the inter-coil joint resistances.

Action Status: 10/30/06 - Detailed test procedure to be supplied by April 2007.

10/16/06 - Measurement of inter-coil joint resistances will be carried out during final testing of the flight magnet at SM rather than during the magnet test in its test rig. Reason for this is the presence of a persistent switch in the assembled flight magnet.

Open Item Number: MAG-Review-07 RID Open Date: 8/9/2006

Title: Magnet Endurance

*Intiator(s):* Robin Staffin/DOE

Description: Present plans to measure the expected endurance on the system before flight.

## **Action Item Information**

Actionee(s): Stephen Harrison Action Due Date: 4/15/2007

Action: Document a plan to measure magnet endurance.

Action Status: 10/30/06 - Detailed procedure by April 2007.

Open Item Number: MAG-Review-11 RID Open Date: 8/9/2006

Title: Test Readiness Review

**Intiator**(s): Robin Staffin/DOE

Description: Perform a Test Readiness Review with a committee of independent experts. Experts must have access to the

full test plan.

#### **Action Item Information**

Actionee(s): Stephen Harrison?

Action Due Date: 1/15/2007

**Action:** Perform a Test Readiness Review with a committee of independent experts. Experts must have access to the full test plan.

Action Status: 2/26/2007 - Mike to determine requirements for TRR so that SM can plan. Expect Plan roughly two-

weeks prior to TRR.

8/21/06 - More information and clarification of the requirements and logistics of this review are required.